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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

VINH, LAN

ART UNIT PAPER NUMBER

1765

DATE MAILED: 03/13/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/995,613

Applicant(s)

HASEGAWA, KOU

Examiner

Lan Vinh

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/995613.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statement (IDS) filed on 2/28/2002 has been considered. The PTO form 1449 is enclosed in this office action.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 9-12, 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaisaki et al (US 6,194,317).

Kaisaki discloses a method of planarizing/polishing includes planarizing/polishing the wafer surface by using a subpad in the presence of a working solution/ aqueous solution containing an oxidizing agent (col 10, lines 16-17, col 12, lines 51-57), it is preferred that during planarization/polishing there will be a flow of working solution between the abrasive article and the wafer surface, the abrasive particles is secured to the subpad (col 10, lines 22-33), which reads on polishing a surface to be polished of an object to be polished using a polishing pad while existing an aqueous chemical mechanical polishing solution containing an oxidizing agent between polishing surface

of the polishing pad containing abrasive and the surface of the object to be polished since the term "the polishing part" is defined as comprise the entirety of the polishing pad or just a part of the polishing pad" in page 8 of the specification

Regarding claim 2, Kaisaki discloses that the abrasive particles can be alumina (col 18, lines 10-11)

Regarding claim 3, Kaisaki discloses the step of dispersing abrasive particles in a binder (curable polymer) that is formed by solidifying the flowable binder precursor (col 4, lines 41-63), which reads on forming the polishing part by solidifying an aqueous dispersion in which a matrix material and abrasive are respectively dispersed and contained since the term "matrix material" is defined as a crosslinked polymer in page 8 of the specification.

Regarding claims 4, 12, Kaisaki further discloses that the preferred working liquid is substantially free of abrasive particles such as silica, zirconia (col 15, lines 32-34), which reads on the abrasive is not contained in the aqueous chemical mechanical polishing solution.

Regarding claims 9, 17, Kaisaki discloses that the working liquid/aqueous polishing solution contains benzotriazole (col 15, lines 8-10), which reads on the aqueous solution contains one heterocyclic compound since benzotriazole is defined as an heterocyclic compound in page 17 of the specification.

Regarding claims 10, 20, Kaisaki discloses that his method of refining a surface of a wafer suited for semiconductor fabrication (see abstract)

Regarding claim 11, Kaisaki discloses that the abrasive articles comprises a polymeric backing (col 4, lines 42-44), which reads on the abrasive is attached to a matrix/polymer material

Regarding claim 18, Kaisaki discloses that the working liquid/aqueous polishing solution contains citric acid/organic acid (col 14, lines 6-7)

Regarding claim 19, Kaisaki discloses that the surface of the wafer contains copper (col 9, lines 1-3, fig. 1)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-8, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaisaki et al (US 6,194,317) in view of Mueller et al (US 5,958,288)

Kaisaki method has been described above in paragraph 3. Unlike the instant claimed invention as per claims 5, 13, Kaisaki does not disclose using one multivalent metal ion in his working liquid/aqueous polishing solution.

However, Mueller discloses a method for polishing metal comprises the step of adding metal such as : copper, iron, titanium to a chemical mechanical composition (col 5, lines 23-33), which reads on using one multivalent metal ion in the aqueous polishing solution.

Since Kaisaki is concerned with a method of planarizing/polishing metal layer on a wafer using an abrasive pad and an aqueous polishing solution contains an oxidizing agent, one skilled in the art would have found it obvious to modify Kaisaki's working liquid by adding metal ion to the working liquid/ aqueous polishing solution as per Mueller because Mueller states that the oxidizing agent/catalyst (metal ion) combination is useful when incorporated into a CMP slurry or when used alone in conjunction with an abrasive pad to polish metal (col 4, lines 26-28)

Regarding claims 6, 14, Kaisaki discloses that the working liquid/aqueous polishing solution contains citric acid/organic acid (col 14, lines 6-7)

Regarding claims 7, 15, Kaisaki discloses that the surface of the wafer contains copper (col 9, lines 1-3, fig. 1), which reads on the surface of the wafer contains metal element belonging to the group 3-13.

Regarding claims 8, 16, Kaisaki discloses that his method of refining a surface of a wafer suited for semiconductor fabrication (see abstract)

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 703 305-6302. The examiner can normally be reached on M-F 8:30-5:30 PM

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.



LV
March 7, 2003